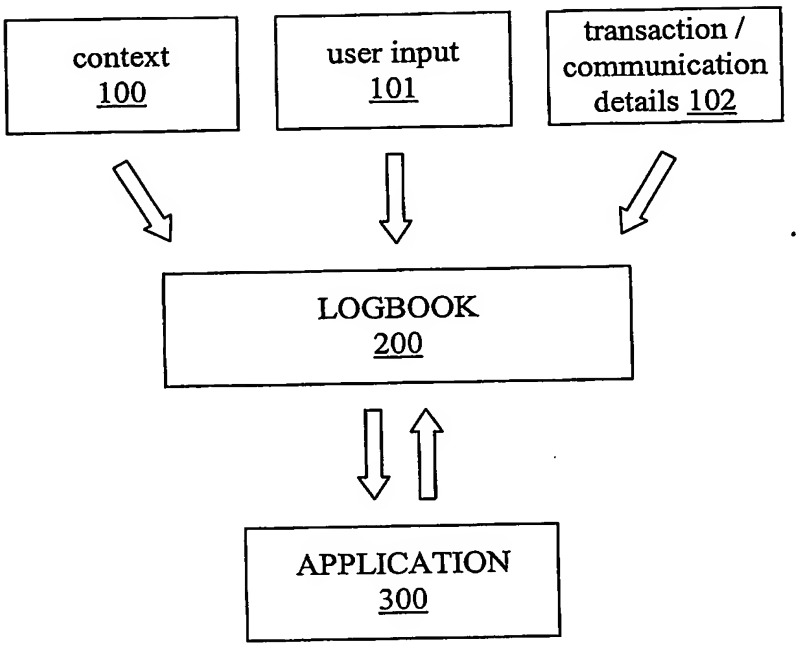
context
100
user input
101
transaction / communication details 102
LOGBOOK
200
APPLICATION
300

Fig. 1a

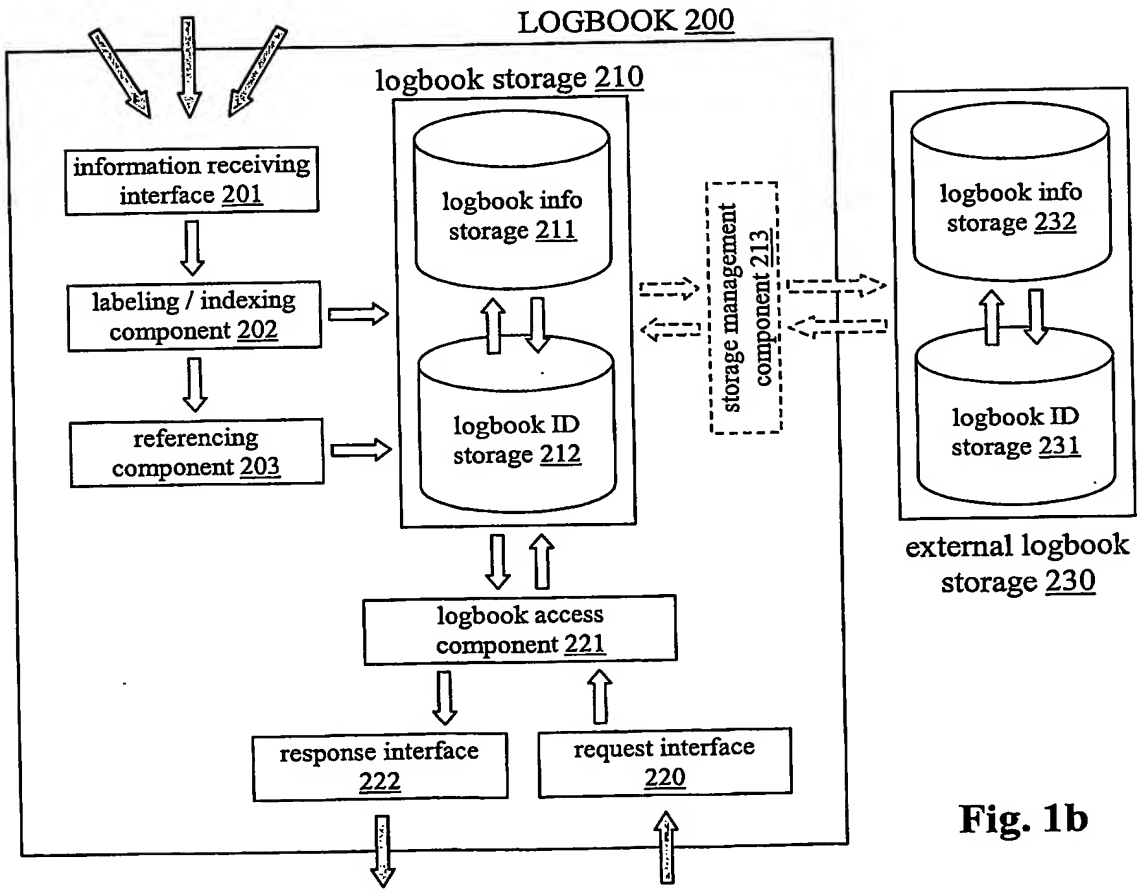
LOGBOOK 200
logbook storage 210
information receiving interface 201
labeling / indexing component 202
referencing component 203
logbook info storage 211
logbook ID storage 212
storage management component 213
logbook info storage 232
logbook ID storage 231
external logbook storage 230
logbook access component 221
response interface 222
request interface 220

Fig. 1b

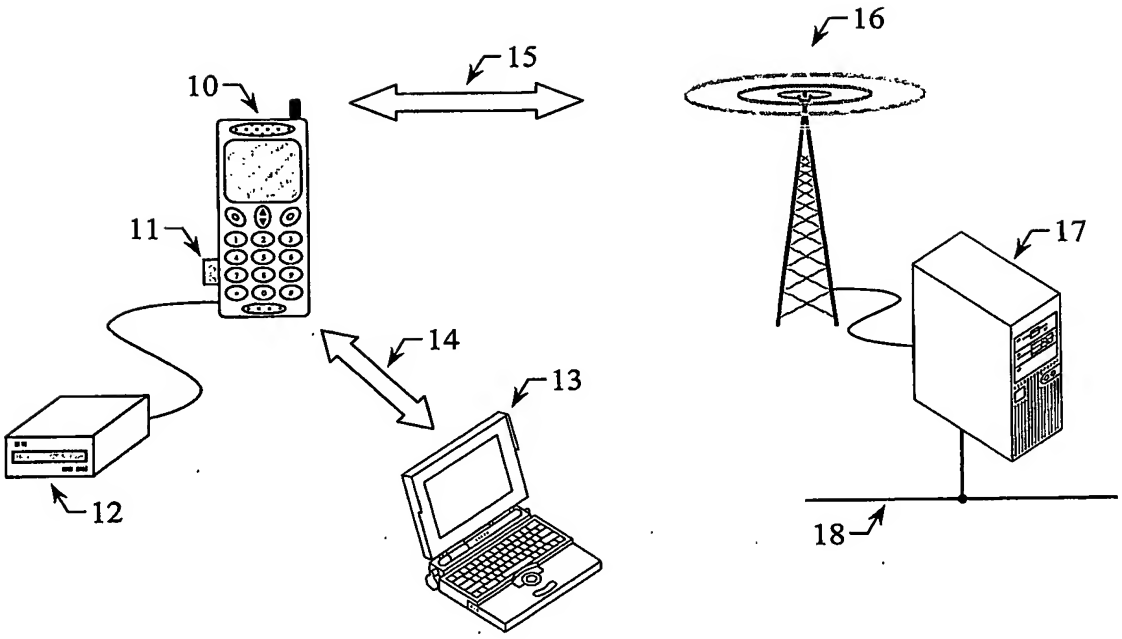

Fig. 1c

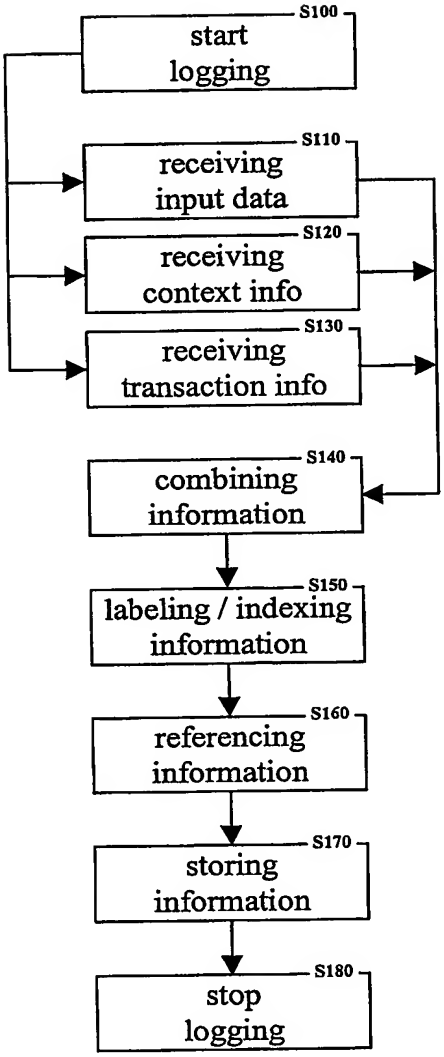
S100
start logging
S110
receiving input data
S120
receiving context info
S130
receiving transaction info
S140
combining information
S150
labeling / indexing information
S160
referencing information
S170
storing information
S180
stop logging

Fig. 2a

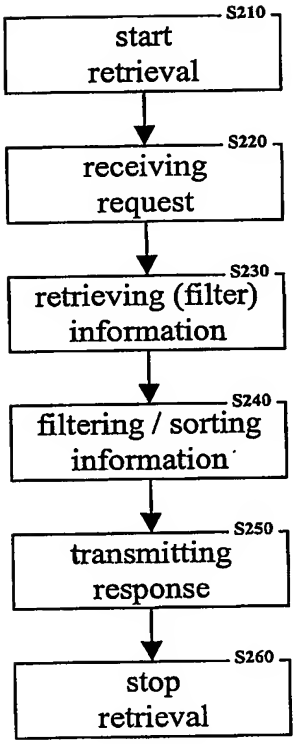
S210
start retrieval
S220
receiving request
S230
retrieving (filter) information
S240
filtering / sorting information
S250
transmitting response
S260
stop retrieval

Fig. 2b

Calendar Entry #i

Date:	*Friday; December 6th, 2002*
Time:	*18:00 - 19:00 (scheduled)*
Who:	*Santa Claus, Rudy "Rednose" Reindeer*
Where:	*near north pole*
Type:	*Meeting*
Importance:	*high*
notes:	***CONFIDENTIAL !*** *Main topic: X-mas gifts for sun* *Don't forget gift list !*

Calendar Entry #j

Date:	*Friday; December 6th, 2002*
Time:	*19:10 - 19:25 (scheduled)*
Who:	*Jane (my wife)*
Where:	
Type:	*Telephone Conference*
Importance:	*high*
notes:	***CONFIDENTIAL !*** *Conclusions of the meeting with Santa Claus*

Fig. 3a

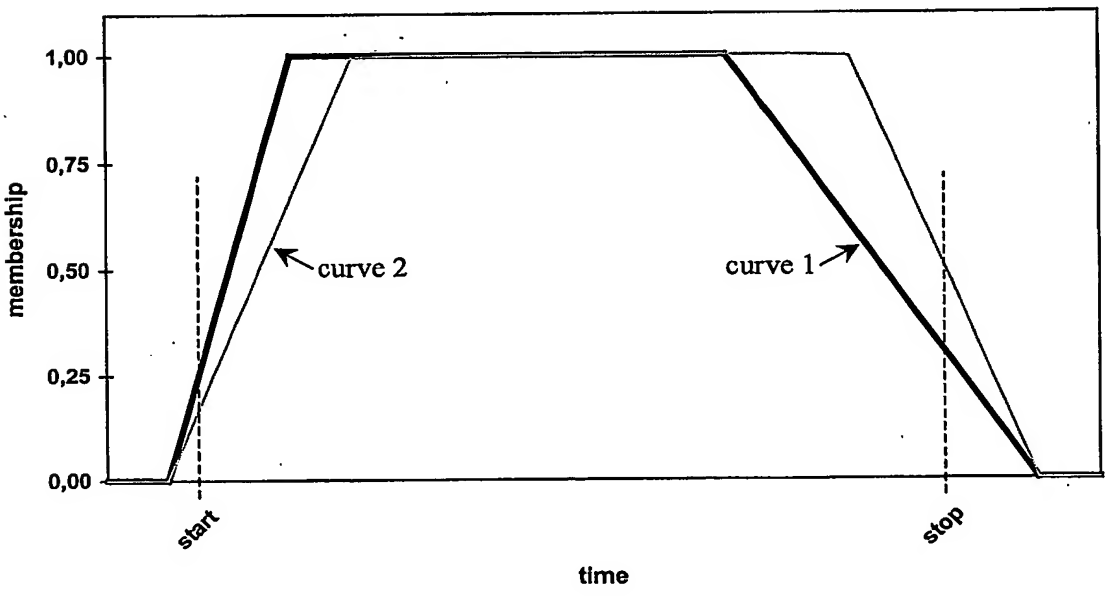

Fig. 3b

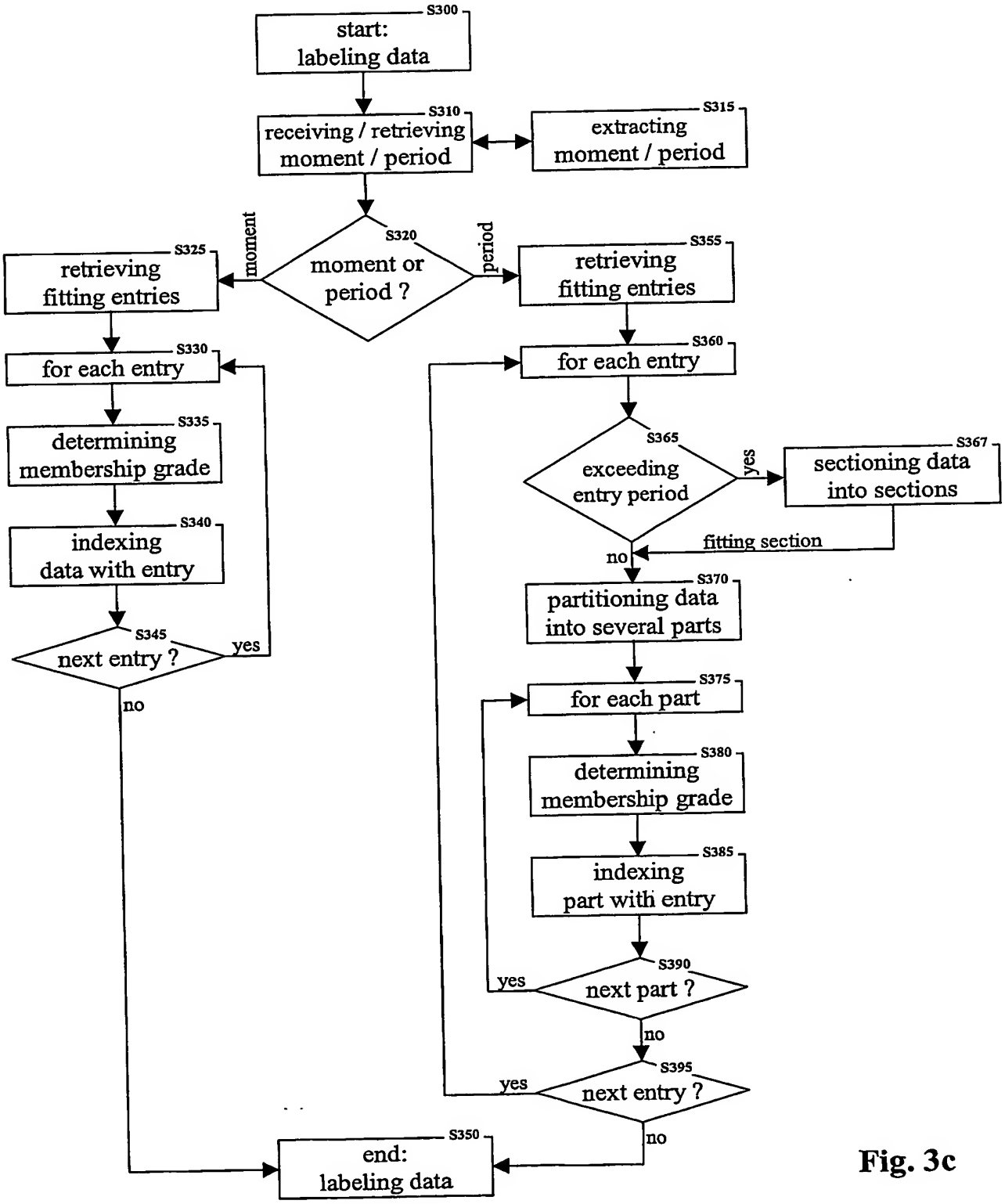
S300
start: labeling data
S310
receiving / retrieving moment / period
S315
extracting moment / period
S320
moment or period ?
moment
period
S325
retrieving fitting entries
S330
for each entry
S335
determining membership grade
S340
indexing data with entry
S345
next entry ?
yes
no
S355
retrieving fitting entries
S360
for each entry
S365
exceeding entry period
yes
S367
sectioning data into sections
fitting section
no
S370
partitioning data into several parts
S375
for each part
S380
determining membership grade
S385
indexing part with entry
S390
next part ?
yes
no
S395
next entry ?
yes
no
S350
end: labeling data

Fig. 3c

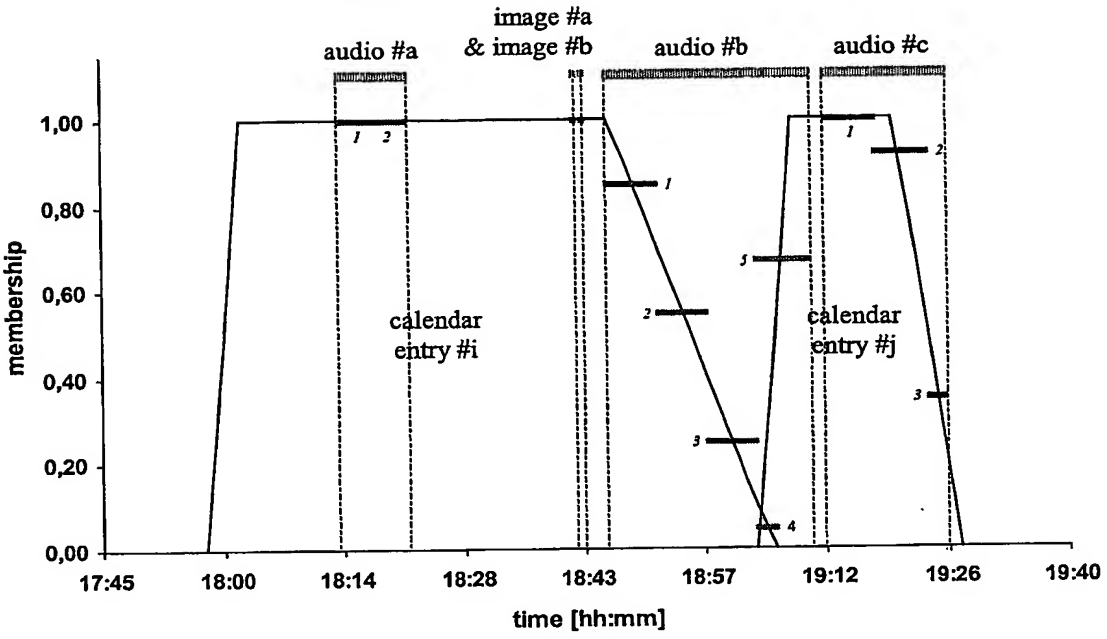

Fig. 3d

Audio File #a

Date: *Friday; December 6th, 2002*
Time: *18:14 - 18:22*
Index 1: *Calendar Entry #i (μ: 1.00 / T: 18:14 - 18:20)*
Index 2: *Calendar Entry #i (μ: 1.00 / T: 18:20 - 18:22)*
...

Audio File #b

Date: *Friday; December 6th, 2002*
Time: *18:46 - 19:10*
Index 1: *Calendar Entry #i (μ: 0.85 / T: 18:46 - 18:52)*
Index 2: *Calendar Entry #i (μ: 0.55 / T: 18:52 - 18:58)*
Index 3: *Calendar Entry #i (μ: 0.25 / T: 18:58 - 19:04)*
Index 4: *Calendar Entry #i (μ: 0.05 / T: 19:04 - 19:06)*
Index 5: *Calendar Entry #j (μ: 0.67 / T: 19:04 - 19:10)*
...

Audio File #c

Date: *Friday; December 6th, 2002*
Time: *19:12 - 19:28*
Index 1: *Calendar Entry #i (μ: 1.00 / T: 19:12 - 19:18)*
Index 2: *Calendar Entry #i (μ: 0.92 / T: 19:18 - 19:24)*
Index 3: *Calendar Entry #i (μ: 0.25 / T: 19:24 - 19:28)*
...

Image File #a

Date: *Friday; December 6th, 2002*
Time: *18:42*
Index 1: *Calendar Entry #i (μ: 1.00)*
...

Image File #b

Date: *Friday; December 6th, 2002*
Time: *18:43*
Index 1: *Calendar Entry #i (μ: 1.00)*
...

Fig. 3e

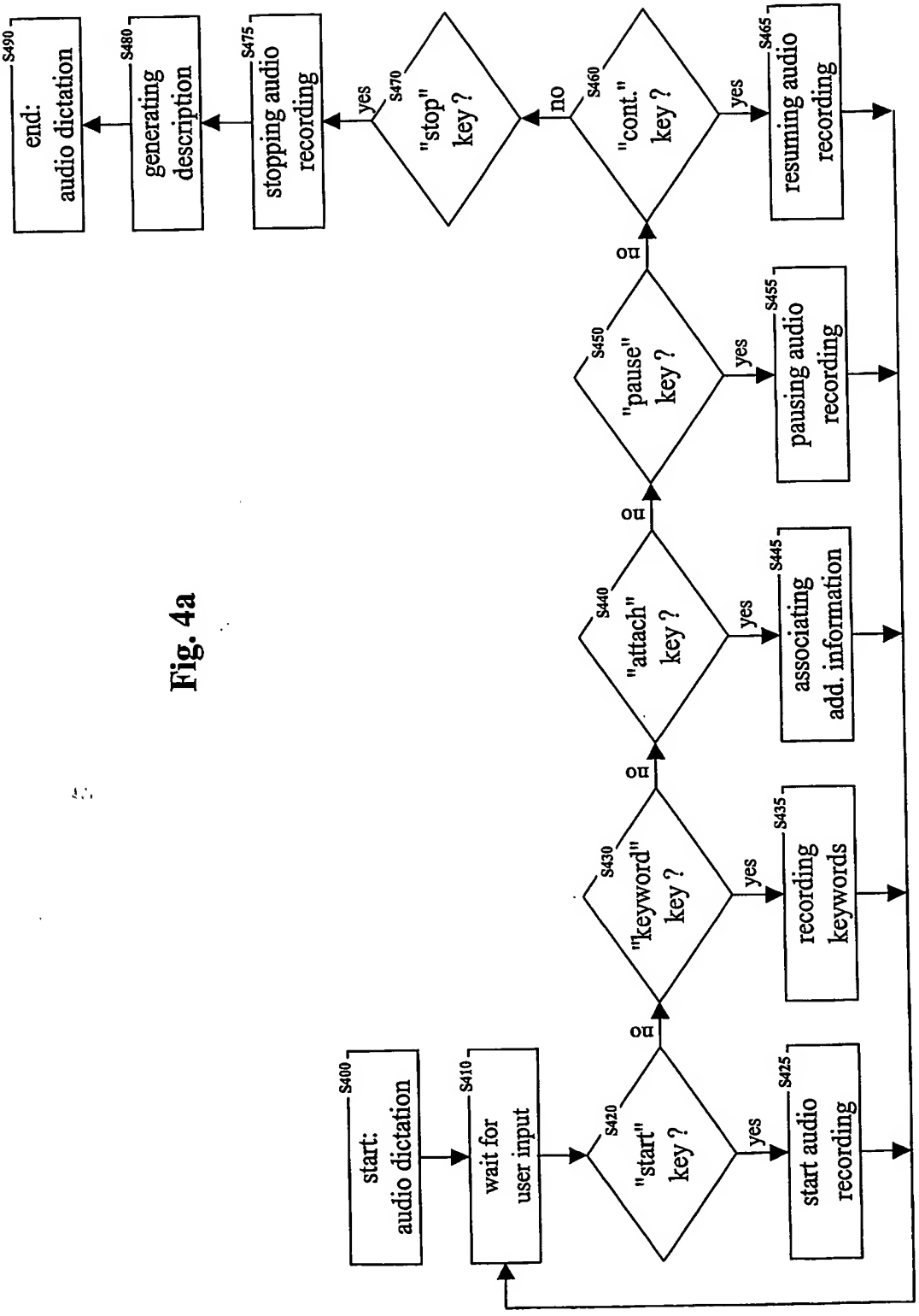
start: audio dictation
S400
wait for user input
S410
"start" key ?
S420
yes
start audio recording
S425
no
"keyword" key ?
S430
yes
recording keywords
S435
no
"attach" key ?
S440
yes
associating add. information
S445
no
"pause" key ?
S450
yes
pausing audio recording
S455
no
"cont." key ?
S460
yes
resuming audio recording
S465
no
"stop" key ?
S470
yes
stopping audio recording
S475
generating description
S480
end: audio dictation
S490

Fig. 4a

#	user operation	terminal operation	
1	pushing "start" key	storing: initiating:	TIME1, IMEI, location, other data; recording audio data to storage device (AUDIO1)
2	dictating audio information	recording:	audio data to storage device (AUDIO1)
3	pushing and holding "keyword" key	initiating: storing: *continuing:*	recording audio data to memory (KEYWORD_AUDIO1); TIME2; *recording audio data to storage device (AUDIO1)*
4	dictating keywords	recording: *continuing:*	audio data to memory (KEYWORD_AUDIO1) *recording audio data to storage device (AUDIO1)*
5	releasing "keyword" key	stopping: *continuing:*	recording audio data to memory (KEYWORD_AUDIO1); *recording audio data to storage device (AUDIO1)*
6	dictating audio information	*continuing:*	*recording audio data to storage device (AUDIO1)*
7	pushing "pause" key	pausing: storing:	recording audio data to storage device (AUDIO1); TIME3
8	taking image & pushing "attach" key	attaching: storing:	image to audio data (AUDIO1) picture to memory (IMAGE1)
9	pushing "continue" key	storing: resuming:	TIME4; recording audio data to storage device (AUDIO1)
10	dictating audio information	*continuing:*	*recording audio data to storage device (AUDIO1)*
11	pushing "stop" key	stopping: storing: storing generating:	recording audio data to storage device (AUDIO1); TIME5 to storage device: IMAGE1, KEYWORD_AUDIO1; description information (DICTATION1)

Fig. 4b

```
1: <ID: Storage ID>
2: <ID: device ID>
3: <ID: start time>
4:
5: <BEGIN>
6:   Start time: TIME1
7:   Stop  time: TIME5
7:
8:   Link to AUDIO1
10:
11:   <#keywords>
12:     TIME2
13:     Link to KEYWORDS_AUDIO1
14:
15:              M
16:   <#pauses>
17:     TIME3
18:     TIME4
19:
20:   <#embedded objects>
21:     TIME3
22:     Link to IMAGE1
23:
24:   <#location information>
25:     location related data
26:
27:   <#other information>
28:     sensor related data
29:
30: <END>
```

Fig. 4c

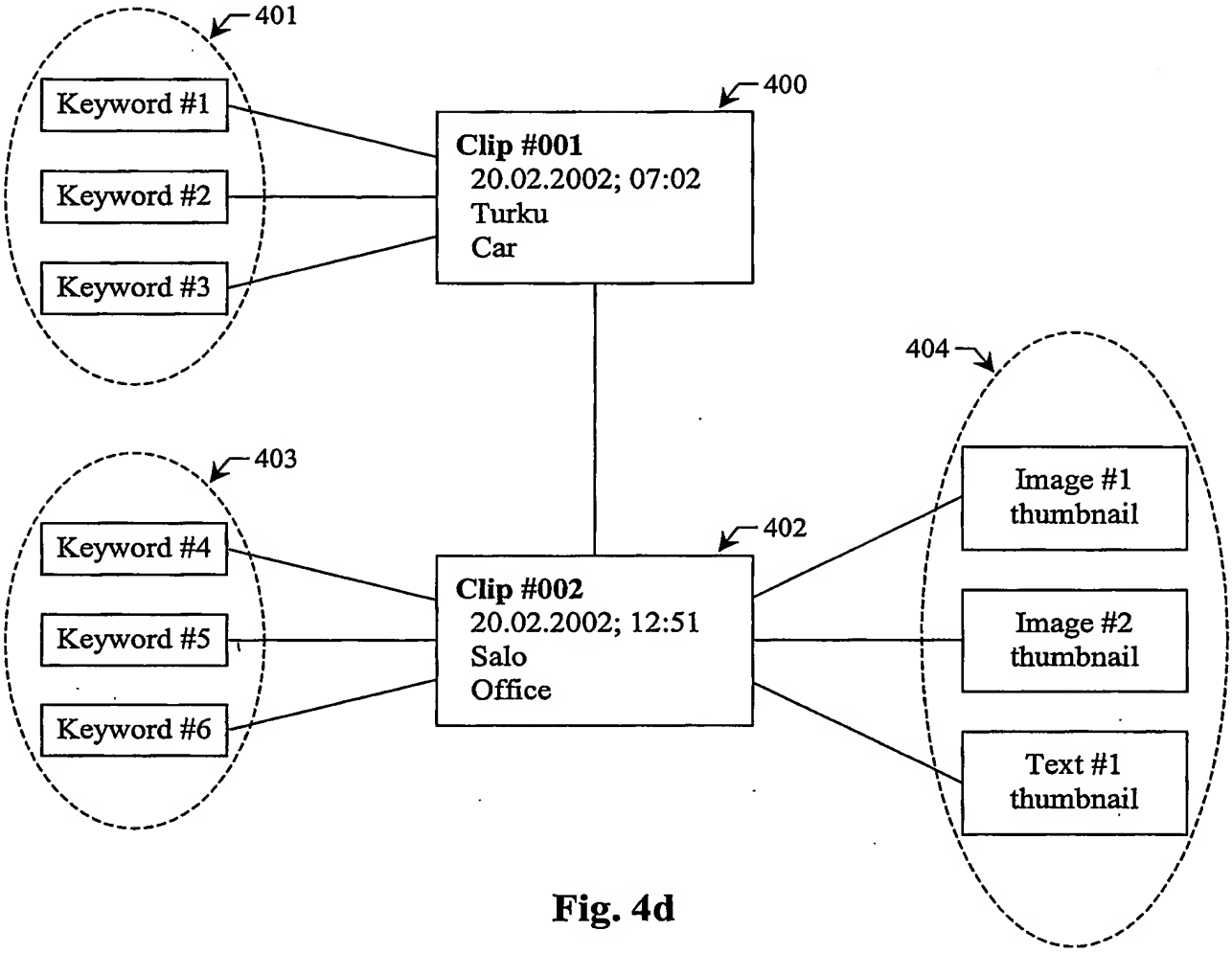

Fig. 4d

Clip	Date / Time	Place	Thumbprint	Keywords	Images
#001	20.02.2002 7:02	Turku / Car	-	*Link keywd #1* *Link keywd #2* *Link keywd #2*	-
#002	20.02.2002 12:51	Salo / Office	*Link text #1*	*Link keywd #4* *Link keywd #5* *Link keywd #6*	*Link img #1* *Link img #2*
M	M	M	M	M	M

Fig. 4e

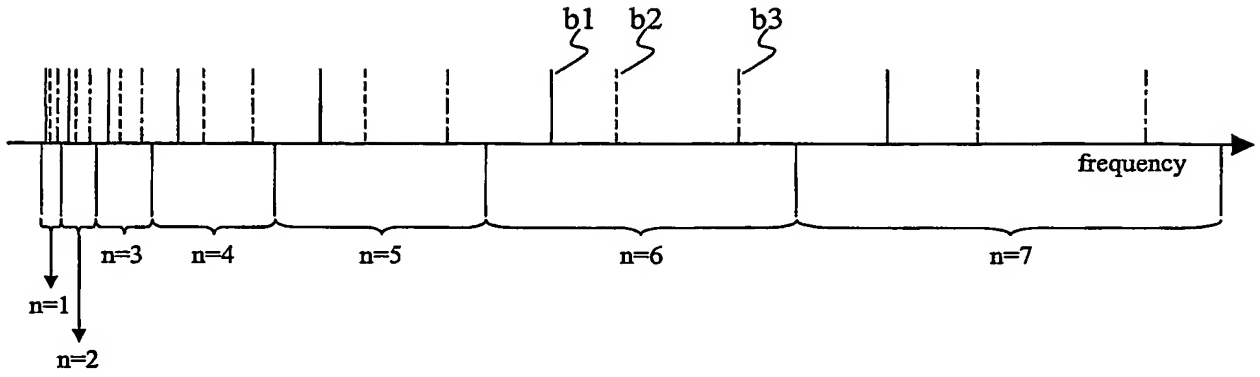
b1
b2
b3
frequency
n=3
n=4
n=5
n=6
n=7
n=1
n=2

Fig. 5a

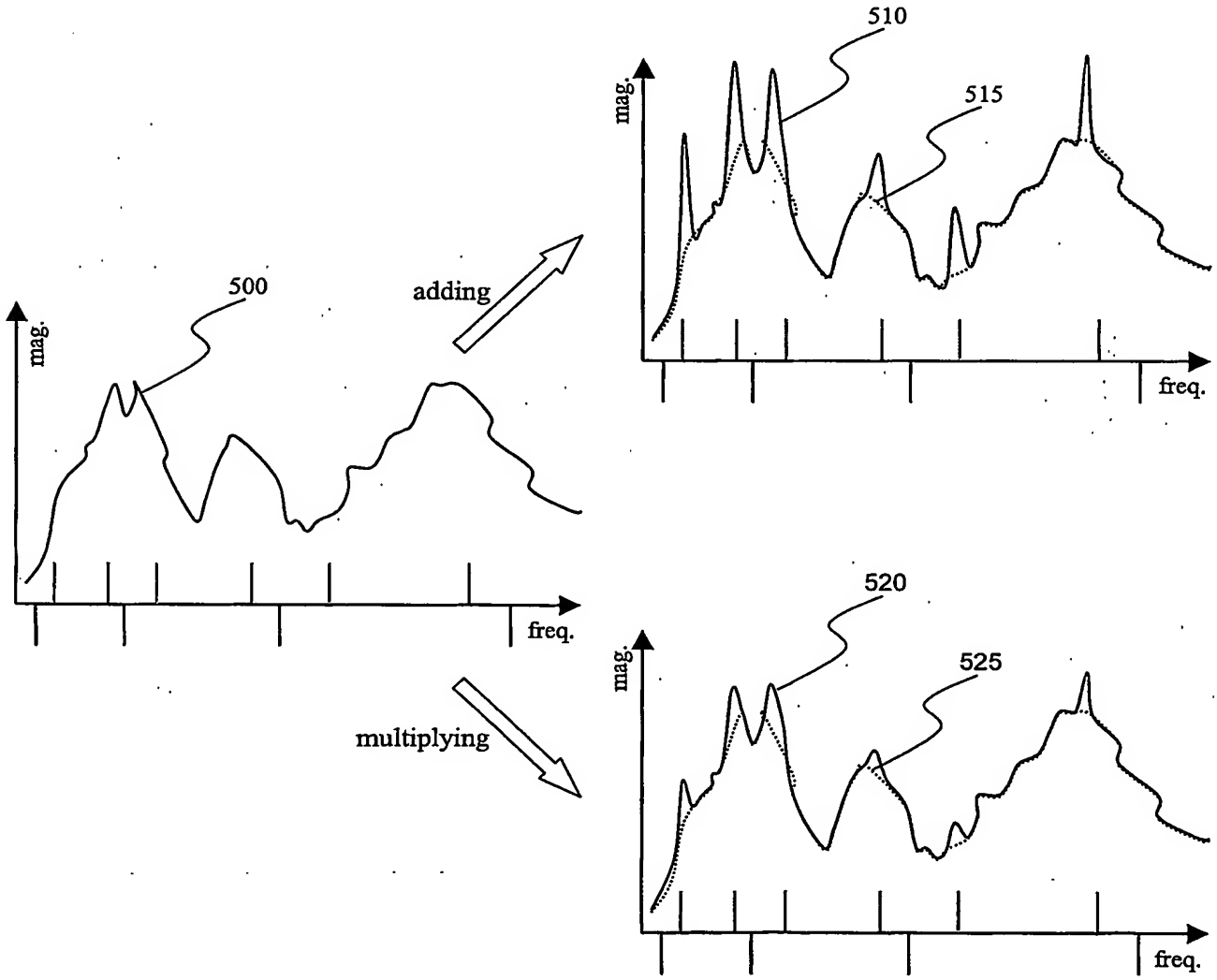
510
515
mag.
freq.
500
adding
mag.
freq.
520
525
multiplying
mag.
freq.

Fig. 5b

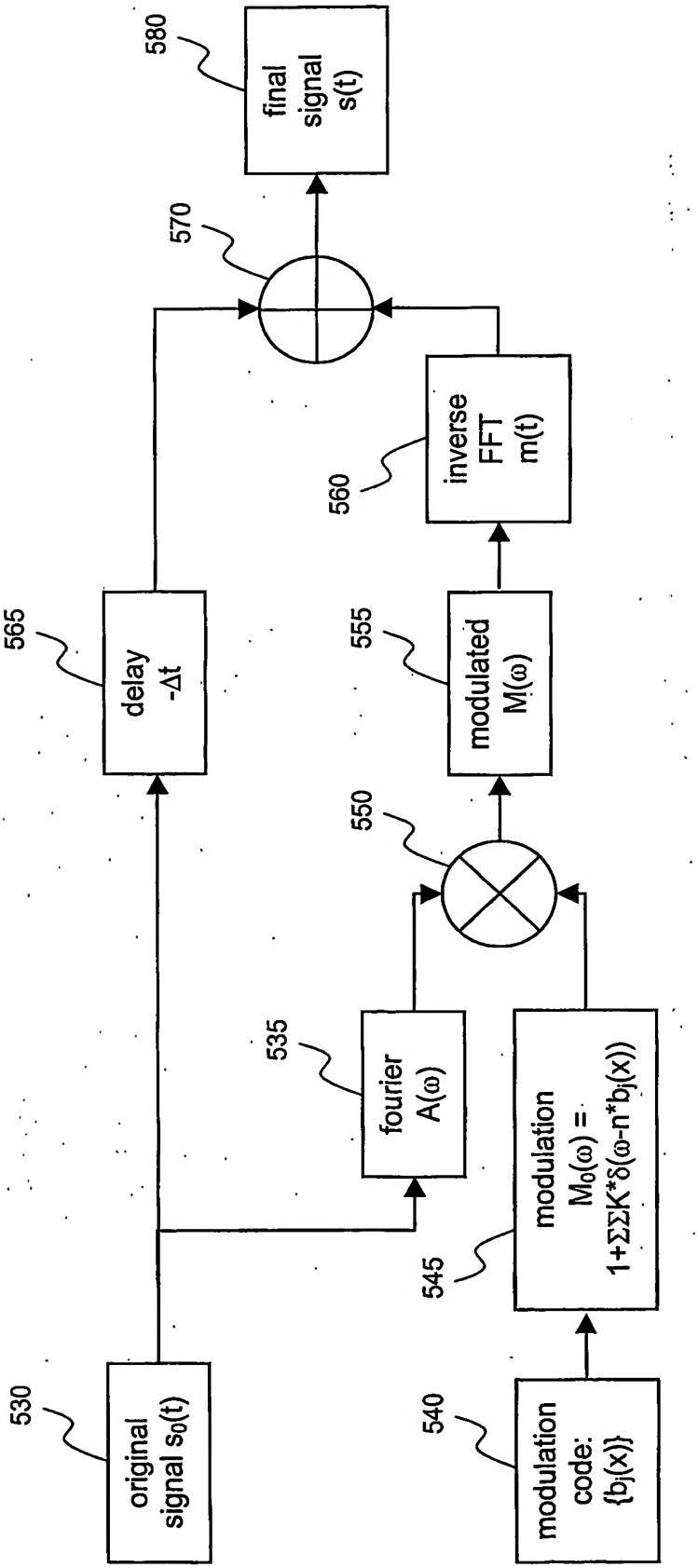
580
final signal s(t)
570
560
inverse FFT m(t)
565
delay -Δt
555
modulated M(ω)
550
535
fourier A(ω)
545
modulation M0(ω) = 1+ΣΣK*δ(ω-n*bj(x))
530
original signal s0(t)
540
modulation code: {bj(x)}

Fig. 5c

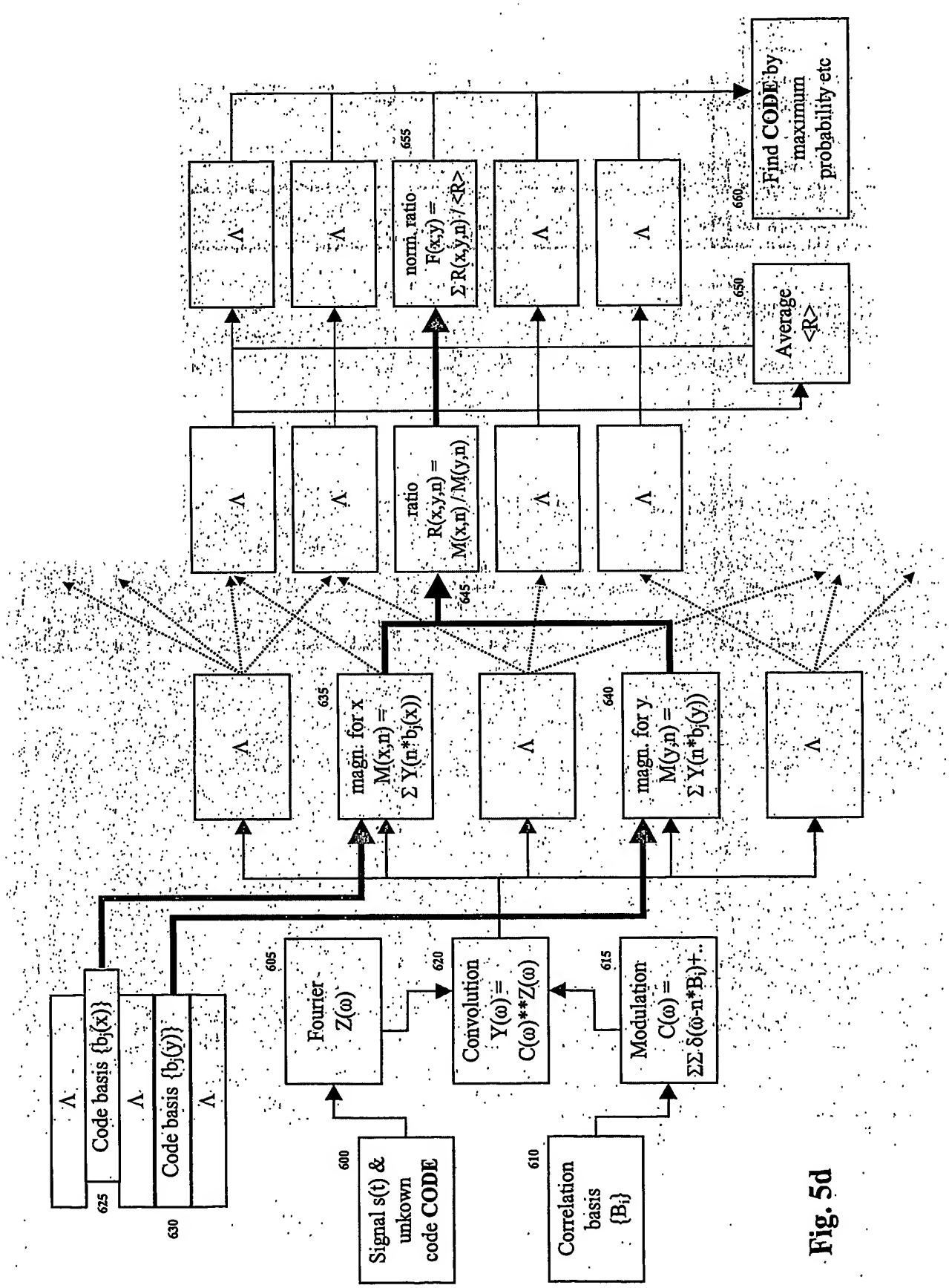
Signal s(t) & unkown code CODE
600
Correlation basis {Bi}
610
Fourier Z(ω)
605
Convolution Y(ω)= C(ω)**Z(ω)
620
Modulation C(ω) = ΣΣ δ(ω-n*Bi)+..
615
Code basis {bj(x)}
625
Code basis {bj(y)}
630
magn. for x M(x,n) = Σ Y(n*bj(x))
635
magn. for y M(y,n) = Σ Y(n*bj(y))
640
ratio R(x,y,n) = M(x,n) / M(y,n)
645
norm. ratio F(x,y) = Σ R(x,y,n) / <R>
655
Average <R>
650
Find CODE by maximum probability etc
660

Fig. 5d